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HNF1 is a sensitive and specific novel marker for yolk sac tumor: a tissue microarray analysis of 601 testicular germ cell tumors

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Abstract: Hepatocyte Nuclear Factor 1 beta (HNF1) is a transcription factor which plays an important role during early organogenesis, especially of the pancreato-biliary and urogenital tract. Furthermore, HNF1 is an established marker in the differential diagnosis of ovarian cancer and shows a distinct nuclear expression in the clear cell carcinoma subtype. Recently, it has been described in yolk sac tumor, which represents a common component in many non-seminomatous germ cell tumors. Due to its broad histologic diversity, the diagnosis may be challenging and additional tools are very helpful in the workup of germ cell tumors. Immunohistochemistry was used to study HNF1 expression in a tissue microarray (TMA) of 601 testicular germ cell tumors including seminoma, embryonal carcinoma, yolk sac tumor, choriocarcinoma, teratoma, germ cell neoplasia in situ (GCNIS), and normal tissue. The expression pattern was compared to glypican 3 (GPC3) and -fetoprotein (AFP), two markers currently in use for the detection of yolk sac tumor. HNF1 showed a distinct nuclear staining in comparison to the cytoplasmic pattern of GPC3 and AFP. The sensitivity and specificity of HNF1 were 85.4% and 96.5%, of GPC3 83.3% and 90.7%, of AFP 62.5% and 97.7%. We conclude that HNF1 allows a reliable distinction of yolk sac tumor from other germ cell tumor components. Therefore, we propose HNF1 as a novel and robust marker in the immunohistochemical workup of testicular germ cell tumors.

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